

GP-303152

FLUID DAMPER HAVING CONTINUOUSLY
VARIABLE DAMPING RESPONSE

ABSTRACT OF THE DISCLOSURE

An improved damping apparatus that utilizes a fluid having a viscosity that may be varied by the application of an electromagnetic field, such as a magnetorheological fluid or an electrorheological fluid, to provide the damping response. The damping apparatus includes a linear to rotary conversion mechanism which comprises a translatable member that is adapted for linear translation in a forward and a reverse direction and a rotatable member comprising a rotatable shaft that is rotatably coupled to the translatable member; wherein translation of the translatable member in one of the forward or the reverse directions produces a forward or a reverse rotation of the rotatable member and shaft, respectively. The damping apparatus also includes a damping mechanism which comprises a hub that is fixed to the shaft, a means for generating a variable electromagnetic field in response to an applied electrical signal that may be continuously varied in response to an input signal that is representative of a desired damping force and a fluid having a viscosity that may be continuously varied by application of the electromagnetic field that is in touching contact with the hub. Application of the variable electromagnetic field to the fluid produces changes in the viscosity of the fluid that in turn provides variable resistance to rotation of the hub and resistance to translation of the translatable member, thereby providing a damping apparatus with a continuously variable damping response.